

Geographical mobility and labor market outcomes of Maastricht University alumni

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Geographical mobility and labor market outcomes of Maastricht University alumni

ROA Rapport

ROA-R-2017/4

Researchcentrum voor Onderwijs en Arbeidsmarkt | ROA
Research Centre for Education and the Labour Market | ROA

GEOGRAPHICAL MOBILITY AND LABOR MARKET OUTCOMES OF MAASTRICHT UNIVERSITY ALUMNI

ROA-R-2017/4

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Quick facts

- We interviewed N=1237 Maastricht University alumni from cohorts 2006-2009 five years after graduation
- About 27% of them come from abroad (mostly Germany and Belgium)
- 55% of international alumni work in their previous country of residence five years after graduating
- About 18% of international alumni are employed in the Netherlands five years after graduating
- Alumni who are employed in the Netherlands often work for internationally active organisations, or work in international job
- Alumni are generally satisfied with the extent to which Maastricht University prepares them for the (international) labour market
- Geographically mobile alumni have better chances of obtaining university-level jobs
- Alumni who came from abroad but find a job in a third country earn the highest monthly incomes
- Alumni who find jobs outside the Netherlands are more likely to find a job with an international scope.

FOREWORD

The Research Centre for Education and the Labor Market (ROA) of Maastricht University conducts an annual survey to elicit information about the labor market position of our master alumni. These data can also be used to study geographical mobility of former students. In this report, we use data from surveys that were carried out in 2012, 2013 and 2014. Targeted were graduate masters of Maastricht University who completed their masters' degree study in the academic years 2007, 2008 and 2009.

The research project was carried out in cooperation with the Alumni Office of Maastricht University and DESAN Research Solutions. The questionnaire was administered via the website of DESAN Research Solutions. Researchers at DESAN were responsible for the data collection. At DESAN Research Solutions, Monique van Alphen and Han van Dongen cooperated with ROA to administrate the survey. At the Alumni Office of Maastricht University, Denise Villerius and Guido Vandenbroecke provided support. From within Maastricht University the research project is supported by a feedback group, consisting of Hans Ouwersloot, Denise Villerius, Annemarie Spruijt, Rina Vaatstra, Jet Custers, Lutz Krebs, Julienne Erckens and Peggy Rompen.

The report is composed by Mark Levels, Marloes de Hoon and Evelien Sijbers. We also relied on earlier work done by Christoph Meng and Ger Ramaekers. The lay-out was done by Esther Soudant.

01

INTRODUCTION

Background

In the past decades, globalization and European integration have transformed the labor market for European university graduates. The labor market has become increasingly international. The higher education reforms initiated by the Bologna Process and the European Union's Lisbon Strategy for jobs and growth are indicative of the EU ambitions to create an international labor market for graduates from tertiary education and to achieve a strong international integration of tertiary education.

In this policy reality, a strong international profile may be an increasingly important distinguishing asset for European universities. From a labor market perspective, a key indicator of the extent to which international ambitions of universities are met, may be the extent to which they succeed in preparing students for participation in an international labor market.

In the 2016 edition of the prestigious annual ranking of top universities published by Times Higher Education, Maastricht University is firmly established as one of the world's most international universities.¹ Located at the heart of the German-Dutch-Belgian Euregio, the university has always fostered a strong international ambition, which is expressed in its 'International Classroom, the explicit focus on European and global perspectives in education, the international student body, and the strong link with the border areas. The university mission statement maintains that "Maastricht University (...) is truly international: in student population, curricula and mentality, helps students develop as global citizens at the forefront of their generation (...), and is anchored in society, in Maastricht and the Euregio." Further internationalization is a key component of the Strategic Plan "Community at the CORE" 2017-2021. The extent to which these international ambitions are met and result in better outcomes for students remains an open question. In this report, we provide answers to some of the many questions regarding international mobility of our alumni.

¹ The list rank orders all universities in the world. Maastricht University takes a 14th place. <https://www.timeshighereducation.com/world-university-rankings>

Understanding student mobility

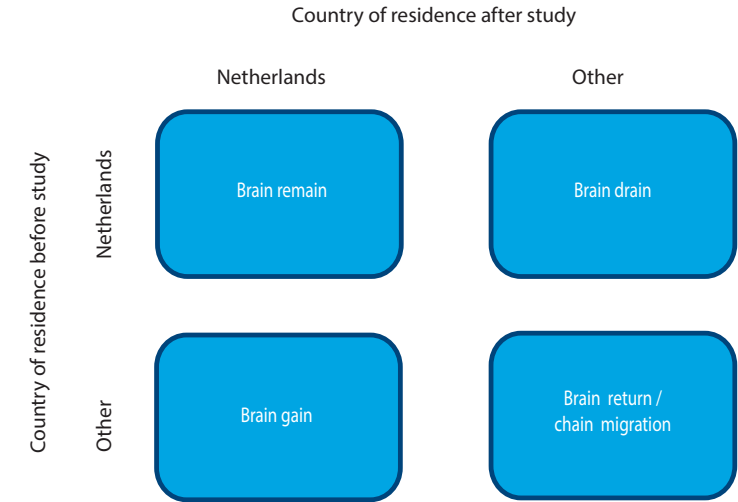
Mobility patterns of university students and graduates are complex. Students may travel to a foreign country to receive a university education, and may then travel to yet another country to get a job. Others may return to their country of birth after graduation, or remain in the country in which they obtained a degree.

To understand what drives students' geographical mobility after they graduate, it may be helpful to simplify the complex thought processes and motivational factors that eventually results in graduate's mobility decisions. We use three main guiding questions to organize our observations:

1. Where are alumni able to gain the highest rewards (e.g. income, job quality) from the education they received?
2. To what extent are alumni connected to their origin country?
3. To what extent are alumni connected to the country in which they received tertiary education?

Answering these questions helps to explain how Maastricht University alumni's international mobility relates to various outcomes. We may assume that university graduates will generally strive to maximize returns to their investment in education: they will search for the best paying job with the highest quality. However, if maximizing returns would be the only variable graduates would consider, borders should not matter in this decision-making process. Graduates would just move to the country in which peers with a similar background, personal characteristics and skills would be most likely to find a job and earn the highest salaries. However, connecting bonds may limit the extent to which graduates are willing to relocate internationally. Existing bonds with families and friends may be a strong incentive to remain in (or return to) one's origin country after graduation. Similarly, foreign students may form strong connecting bonds with people in the country in which they go to university. These bonds may provide a strong incentive to remain in a country after graduation.

FIGURE 1 Macro level consequences of migration of students to and from the Netherlands



Answering these questions may also provide insights in macro level outcomes of alumni mobility decisions, that is, in outcomes from the perspective of human capital potential at the European and national levels (see Figure 1). Taking the Netherlands as an example, Van Dijk & Venhorst (2009) argue that Dutch graduates who stay in the Netherlands after graduation tend to have a strong bond with the Netherlands. On a macro-level, such graduates provide for *brain stay* (or *brain remain*) in the Netherlands, but of course do not contribute much to the international exchange of knowledge as envisioned in Bologna and Lisbon declarations. Similarly, foreign students who feel a strong bond with their origin country may return to the country they resided in before studying in the Netherlands, even if the returns to their education would be high in the Netherlands. In contrast, both Dutch and foreign students who move on to a third country for a job after graduation may have relatively low connectedness.

At the EU level, the net result of *return* or *chain migration* may be zero or positive, given the fact that no human capital is lost and labor market allocation is efficient. At the national level however, return migration (“brain return”) and chain migration may be viewed as negative developments: public investments in human capital are not earned back through tax revenues or productivity gains of national economies. This is equally true for Dutch students that take jobs abroad after graduation: the resulting *brain drain* poses a human capital loss for Dutch economy. However, the negative human capital effects of brain return, chain migration and brain drain may be counterbalanced if a sufficiently large number of foreign students remain in the Netherlands after graduation. From a national perspective, this *brain gain* may contribute significantly to innovation and economic growth.

Research questions

In this report we study the geographic mobility of Maastricht University alumni. We describe mobility patterns of the alumni and explore how geographical mobility of alumni relates to their success on the labor market. The descriptions and analyses presented here are intended to provide insights in cohorts that graduated in 2007, 2008 and 2009.

We aim to answer the following main **research questions**:

1. To what extent are Maastricht University alumni active on international labor markets?
2. How well do the study programs of Maastricht University prepare students for a career in an international labor market?
3. To what extent is geographical mobility after graduation associated with alumni's labor market success?

To answer these and other questions, we focus on various indicators of labor market success. First, we analyze the vertical education-to-job match, indicating whether alumni find jobs that require tertiary education. Secondly, we explore so-called horizontal matches, indicating whether alumni find jobs in their field of study. Thirdly, we evaluate wage differences. Additional to these key indicators, we study job security, job mobility, and the extent to which alumni themselves are of the opinion that they made the school-to-work transition successfully.

We compare five groups with different geographical mobility backgrounds:

1. Dutch alumni employed in the Netherlands ("brain stay")
2. Dutch alumni employed abroad ("brain drain")
3. Alumni who moved to Maastricht from abroad and remained in the Netherlands ("brain gain")
4. Alumni who moved to Maastricht from abroad and were employed in the country they resided in before studying at Maastricht University ("brain return")
5. Foreign alumni employed outside the Netherlands but not in the country they resided in before studying at Maastricht University ("chain migration").

Note that the previous country of residence refers to the country graduates lived in before starting their study in Maastricht. This country will often be their country of birth, but this does not necessarily have to be the case. It should be noted that wherever we refer to 'origin country' we mean 'previous country of residence'.

The different aspects of alumni's international experiences and labor market success are addressed in the following chapters. Much of the statistics presented are aimed at describing differences. We describe the share of alumni working abroad, compare migration rates between faculties, and identify various important destination countries

for the alumni. We also demonstrate that many students are working in businesses and organizations with a strong international outlook, which serves to show the importance of preparing students for an international labor market.

In the third chapter we focus on the extent to which our former students feel that their study at Maastricht University offered a sound preparation for participation on the (international) labor market. The fourth chapter contains analyses of alumni's labor market outcomes. In the final chapter, we tentatively explore the potential role of bonding in explaining mobility patterns. We describe how connected alumni are with the university, with faculties, and with fellow students.

02

DATA

Since the beginning of the 1990s, Maastricht University has kept track of the labor market outcomes of its alumni. This was, and is still being done by regularly surveying UM alumni. The surveys primarily focus on the labor market situation of the alumni, on the link between the labor market situation and the study completed at Maastricht University, and on the quality of their studies in the eyes of the alumni.

For this report we use information on respondents from three graduation cohorts, who were interviewed in three consecutive years. The students from the three cohorts are surveyed five years after graduation. We use the following data sources:²

Survey (t+5)	Graduation cohort
Spring 2012	2006-2007
Spring 2013	2007-2008
Spring 2014	2008-2009

In Table 1 we present respondents' countries of residence before their study at Maastricht University. 73% of respondents resided in the Netherlands before they started at the university, and 27% resided in another country. The share of Dutch residents before their study at Maastricht University is slightly higher in the 2006-2007 cohorts (80%) and slightly lower in the 2008-2009 cohorts (68%).

TABLE 1 Country of residence before study at Maastricht University

	2006-2007		2007-2008		2008-2009		Total (3 cohorts)	
	%	N	%	N	%	N	%	N
The Netherlands	80	313	72	275	68	312	73	900
Other country	20	80	28	108	32	149	27	337
Total	100	393	100	383	100	461	100	1.237*

* we did not have valid origin information not for all respondents

² The survey is population based. Response rates fluctuate around 30%. More detailed information about response rates, sampling strategies, data collection and questionnaire design is available from ROA.

In Table 2 we present the top 5 origin countries³ of international students. As may be expected given that the locations of the universities’ main campuses are in Maastricht, most of the international students are from Germany (45%), followed by Belgium (19%). Other top origin countries are responsible for a much smaller share of students: Bulgaria (3%), United States (3%) and Turkey (2%).

TABLE 2 Top 5 origin³ countries of international students

		%	N
1	Germany	45	159
2	Belgium	19	65
3	Bulgaria	3	12
4	United States	3	11
5	Turkey	2	8

³ Countries students lived before coming to Maastricht University.

03

ALUMNI'S INTERNATIONAL EXPERIENCES

International mobility of Dutch and international alumni

Most of UM alumni originate in the Netherlands. How does the international mobility of Dutch students compare to that of foreign-born students? In Table 3 we compare international careers between alumni born in the Netherlands and those born abroad. We show if alumni find a job in the Netherlands, in another country in which they previously lived, or in a country in which they had not lived before.

For the Dutch-origin alumni, 90% are employed in the Netherlands ("brain stay") and 10% are working in another country ("brain drain"), meaning one out of ten Dutch-born alumni is employed outside the Netherlands five years after graduation. The share of people working abroad is much higher for international alumni (meaning: those who lived abroad before studying at Maastricht University). Of this group, 82% is working outside of the Netherlands. The majority of this group returned to their country of origin: 55% is employed abroad in their previous country of residence ("brain return"). The remaining 27% is working in another country. Also 18% stayed in the Netherlands and is currently employed there ("brain gain").

TABLE 3 Employment abroad after graduation by country of residence before study at Maastricht University (Dutch versus international)

	Dutch alumni		International alumni	
	%	N	%	N
Employed in the Netherlands	90	808	18	62
Employed in previous country of residence (before study in Maastricht)	-	-	55	184
Employed in other country	10	92	27	91
Total	100	900	100	337

To what countries internationally mobile alumni go differs somewhat between Dutch alumni, alumni who return to their previous country of residence and the alumni who move to another country. Table 4 shows that most Dutch-born alumni who find employment abroad, do so in Belgium, Germany and the UK. Most of the return migration of our respondents occurs to Germany, followed by Belgium and Bulgaria. Of the group of responding students who came to Maastricht from abroad but migrated to a third

country after graduating, most alumni end up in Belgium, followed by Germany and Switzerland.

TABLE 4 Top 3 countries of employment abroad

Working abroad: Dutch students	Working abroad: non-Dutch alumni working in country of previous residence	Working abroad: non-Dutch alumni working in country other than country of previous residence
1. Belgium	Germany	Belgium
2. Germany	Belgium	Germany
3. United Kingdom	Bulgaria	Switzerland

International mobility of alumni, by faculty

How many of Maastricht University alumni are working abroad, and how does this differ between faculties? In Figure 2, the percentage of Maastricht University alumni that is working abroad five years after graduating is displayed by faculty. In total, 24% of the 2007-2008 graduates were working abroad, 31% of the 2008-2009 graduates and 34% of the 2008-2009 graduates.

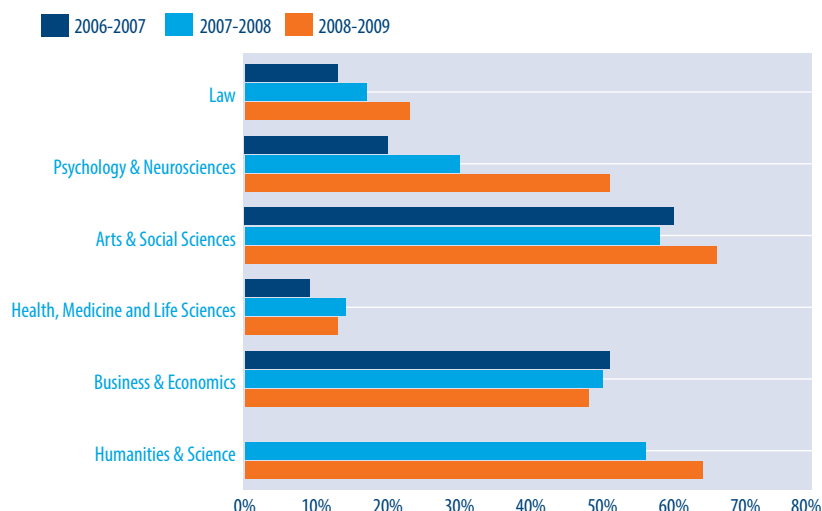
For all three cohorts, graduates from the Faculty of Arts and Social Sciences are the most likely alumni to work abroad. Of the 2006-2007 cohort, 60% of FASOS grads were working abroad, of the 2007-2008 cohort 58% were working abroad, and of the 2008-2009 cohort two-thirds of FASOS graduates (66%) were working abroad. The Faculty of Humanities and Sciences also has a relatively high share of graduates working abroad. Of the 2007-2008 cohort, 56% of graduates from this faculty were working abroad, and this percentage rose to 64% for graduates of the 2008-2009 cohort.

The School of Business and Economics also has a relatively large number of alumni who find work abroad. The numbers are somewhat lower than in the FASOS and FHS. At SBE, 51% of graduates of the 2006-2007 cohort, 50% of the 2007-2008 cohort and 48% of the 2008-2009 cohort were working abroad.

The share of Maastricht University alumni from the Faculty of Law that found employment abroad rose from 13% in the 2006-2007 cohort, to 17% in the 2007-2008 cohort, and to 23% in the 2008-2009 cohort. For the Faculty of Psychology and Neurosciences the increase was even more pronounced. Of the 2006-2007 cohort, about 20% was working abroad. The number rose to 30% for the 2007-2008 cohort. Of the 2008-2009 cohort even more than half (51%) of the graduates were working abroad.

The Faculty of Health, Medicine and Life Science has the lowest share of graduates working abroad. Of the 2006-2007 cohort, about 9% of the graduates were working abroad, followed by 14% of the 2007-2008 cohort and 13% of the 2008-2009 cohort.

FIGURE 2 Share of Maastricht University alumni working abroad (5 years after graduation), by faculty



Working for international organizations

Geographical mobility patterns are only one way of looking at internationalization. Indeed, even alumni who are least mobile may be working in very international environments. Alumni who find employment in the Netherlands may do so with an organization that is highly internationally active, and even those who work for companies of organizations with a strong national scope may regularly have to conduct international business.

This indeed proves to be the case, as Table 5 serves to show. Of Dutch alumni employed in the Netherlands, 38% work in an organization that is active internationally, 20% regularly go on international business trips, and 27% have a job with an international scope. Foreign alumni who remain in the Netherlands more often find jobs that are international in scope (56%) and with international organizations (68%).

Return migrants are somewhat less likely to be employed in an international environment than foreign alumni who are employed in the Netherlands after graduation. Of alumni who may be regarded as return migrants, 58% are employed in an international organization, 35% regularly go on international business trips, and 45% have jobs with an international scope. Note, however, that these numbers are higher than for Dutch alumni who stay in their home country.

Dutch students employed abroad often work in an international organization: about 79% of Dutch alumni who work abroad do so in an international organization or firm.

Over three-quarters of those do so in a job that is international in scope. For those who are currently employed in another country than the Netherlands or their country of residence before their studies, the share of alumni that have an internationally oriented job is even higher. Of these alumni, 87% work in an international organization, 77% have an international job, and 69% have regular international business trips.

TABLE 5 What is the geographical scope of 1) the activities of the organization you are currently working for 2) your own work within the organization you are currently working for?

	Dutch alumni employed in the Netherlands	Dutch alumni employed abroad	Non-Dutch alumni employed in the Netherlands	Non-Dutch alumni employed in country of residence before study in Maastricht	Non-Dutch alumni employed in country other than their previous residence
International organization	38	79	68	58	87
International job	27	76	56	45	77
International business trips	20	71	48	35	69

04

STUDYING AT MAASTRICHT UNIVERSITY FOR AN INTERNATIONAL LABOR MARKET: HELPFUL, OR NOT?

In the previous chapter, we saw that a considerable proportion of Maastricht University alumni is geographically mobile and active in internationally active organizations. How well does Maastricht University prepare its students for this international labor market? In this chapter, we discuss alumni's opinions about the international character of their study program. We provided alumni with a number of different statements about their education. We present their answers in Table 6. We distinguish between Dutch alumni who remain in the Netherlands after graduation, Dutch alumni who find work abroad, migrants who remain in the Netherlands, return migrants, and alumni who move to a new country. We provide the average opinion for each group.

How well are UM alumni prepared for working in cross-culturally diverse organizations? We presented the respondents with the statement 'My study at Maastricht University provides a good basis for dealing with customers, business contacts, professional colleagues etc. from different countries and with diverse cultural backgrounds'. Although alumni are generally happy with the way in which Maastricht University prepares them for professional interactions with people from other cultures, those employed abroad generally agree more with this statement than those employed in the Netherlands.

We also asked whether alumni were of the opinion that their study at Maastricht University provides a basis for developing a career in an international labor market. Here, a similar pattern can be observed. As may be expected, Dutch alumni who work abroad, foreign alumni employed in another country and return migrants agree more than those employed in the Netherlands.

Students were also asked if they felt that their 'study at Maastricht University provides a good basis to maintain an international network'. Return migrants (3.8) and those employed in third country (4.1) give more credits to their studies than those employed in the Netherlands (2.8).

TABLE 6 Alumni's opinions about university education (statements, answering options 1 (not at all) to 5 (to a large extent))

	Dutch alumni employed in the Netherlands	Dutch alumni employed abroad	Non-Dutch alumni employed in the Netherlands	Non-Dutch alumni employed in country of residence before study in Maastricht	Non-Dutch alumni employed in country other than their previous residence
My study at Maastricht University provides a good basis for dealing with customers, business contacts, professional colleagues etc. from different countries and with diverse cultural backgrounds	3,3	3,7	3,4	3,9	3,9
My study at Maastricht University provides a basis for developing a career in an international labor market	3,1	3,9	3,2	3,9	4,3
My study at Maastricht University provides a good basis to maintain an international network	2,8	3,5	3,2	3,8	4,1

05

WHAT JOBS DO ALUMNI SEEK? AND DO THEY GET THEM?

To what extent do internationally active alumni and alumni employed in the Netherlands seek for different jobs? In table 7 we present differences in preferences for job characteristics between alumni who leave the Netherlands after graduation and those who remain. We also present numbers on the extent to which alumni find these jobs.

The importance of most job factors does not significantly differ between those employed in the Netherlands and those employed abroad. However, the possibility to work internationally, a high income and social status are significantly more important for those working abroad than those employed in the Netherlands. This is in line with the theoretical interpretation that graduates choose to travel abroad with the ambition to yield higher returns to their education, both in terms of higher incomes and higher status jobs. Also note that students who remain in the Netherlands somewhat more often feel it is important to combine work and family responsibilities, although the differences are small and not statistically significant.

It seems that internationally active students indeed succeed in their aspiration for high returns to education. Those employed abroad are more likely to work in an international job and rate their income more often as “high”. Those who remain in the Netherlands more often feel they have the opportunity to do something worthwhile for society, and more often feel that they are able to combine work and family responsibilities.

TABLE 7 Differences in preferences for and actual (perceived) job characteristics (scale 1-5)

	How important to you?			How applicable in current job?		
	employed in NL	employed abroad	t-test	employed in NL	employed abroad	t-test
Work autonomy	4,2	4,2	ns	4,1	4,0	ns
Job security	4,0	3,9	ns	3,6	3,7	ns
Possibility to learn new things	4,5	4,6	ns	4,1	4,1	ns
Possibility to work internationally	2,7	3,9	**	2,6	3,6	**
High income	3,5	3,8	**	3,1	3,3	*
New challenges	4,3	4,3	ns	3,9	4,0	ns
Good career prospects	4,1	4,1	ns	3,5	3,5	ns
Social status	3,1	3,3	*	3,5	3,6	ns
Opportunity to do something worthwhile for society	3,9	3,9	ns	3,8	3,5	**
Possibility to combine work and family responsibilities	4,0	3,8	ns	3,7	3,4	**

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

06

LABOR MARKET RETURNS TO EDUCATION

Theories from labor economics suggest that an important reason for migrating after graduation is the motivation to maximize returns to education. In more popular terms, we may expect graduates to relocate to an area in which they can expect the highest benefits from going to university. Findings in the previous chapter support these expectations. To what extent can we observe differences in labor market success between graduate groups with different geographical mobility patterns? In this chapter, we answer that question. We may expect that those who are most willing to be geographically mobile would be most likely to score best on labor market indicators. Indeed, students who come to Maastricht from abroad and leave to a third country after graduation are likely to do so for economic reasons, and we may expect these students to gain higher returns to their investments than students who return home or stay in the Netherlands.

Describing differences

We focus on six indicators of labor market success. The vertical match relates to the extent to which alumni succeed in finding a job that requires university-level education. The horizontal match refers to the extent to which alumni find a job in their field of study. We also explore differences in job security, indicating the extent to which alumni have permanent contracts five years after graduation. Fourthly, we study the quality of the school-to-work transition as experienced by the alumni themselves. Fifthly, we describe job mobility patterns by analyzing whether alumni had more than one job after graduation. Finally, we compare wages. The relevant descriptive statistics are presented in Table 8.

TABLE 8 Labor market outcomes of Maastricht University alumni, by within or outside the Netherlands employment

	Dutch alumni employed in the Netherlands	Dutch alumni employed abroad	Non-Dutch alumni employed in the Netherlands	Non-Dutch alumni employed in country of residence before study in Maastricht	Non-Dutch alumni employed in country other than their previous residence
Vertical match	86	90	92	79	88
Horizontal match	83	79	83	80	83
Job security	63	57	47	80	70
Quality of transition (subjective)	3,36	3,41	3,30	2,86	3,30
Job mobility	57	62	60	64	72
Wage (monthly)	€ 3.933	€ 4.789	€ 3.825	€ 3.891	€ 6.923

Vertical and horizontal match

A vertical match refers to a job that is at least the same level of education as the study that the graduate completed; a horizontal match indicates employment in his or her field of study. Table 8 shows that alumni who are more geographically mobile are most likely to find a vertically matching job. Dutch alumni employed abroad (90%), non-Dutch alumni employed in a country other than their origin country (88%) or the Netherlands (92%) are slightly more often well-matched than Dutch alumni employed in the Netherlands (86%) and return migrants (79%).

The table shows a different horizontal match pattern. Those employed in the Netherlands are most often matched well horizontally (83%), a level comparable to non-Dutch alumni employed in a country other than their origin country. Dutch alumni employed abroad are least likely to have jobs that match their field of study.

Job security

Return migrants are most likely to land a permanent contract five years after graduation, (80%), followed by those who are employed in a third country (70%) and Dutch alumni who remain in the Netherlands (63%). Dutch alumni who work abroad and non-Dutch alumni who work in the Netherlands (47%) are least likely to have found permanent contracts. This may be due to specifics of the labor markets return migrants return to. For example, the German labor market may be characterized by fewer temporary contracts. We may also speculatively interpret this as corroborating evidence for our theoretical frame: if students do return to their home country for reasons of connectedness and personal bonds, they are more likely to settle and more likely to look for permanent contracts to help them do that.

Subjective opinion about the quality of the school-to-work transition

We asked alumni to rate the quality of their transition from university to the labor market on a five point scale. We present the average grade for all three groups. Differences between groups are small, and generally, alumni are satisfied with their school-to-work transition. Return migrants are least satisfied (2.9). Differences are rather small. Again,

we may aim to provide a post hoc explanation for these differences. Two mechanisms may operate here. First, those who remain in the Netherlands are more likely to make the transition more smoothly, as they are familiar with labor market circumstances and, equally important, employers are more likely to be familiar with the quality and content of their university credentials. Students with a Dutch degree returning to, say, Germany, may experience more difficulty explaining to their German employers what their Dutch degree entails than those who remain in the Netherlands. Those who migrate to a third country may face similar differences, but may operate on a more internationally oriented labor market in which foreign credentials are less odd. Also, if their willingness to relocate to a third country pays off in terms of job quality, they may be more likely to rate the quality of the school-to-work transition higher.

Job mobility

We define job mobility as the share of alumni that changed jobs in the five-year period after obtaining their master's degree. Of Dutch alumni employed in the Netherlands, 57% had changed jobs already in the first five years after graduating. Dutch alumni who work abroad are slightly more likely to have been mobile: 62% of these has had more than one job after five years. Most likely to be in school-to-work patterns that are characterized by high job mobility are non-Dutch alumni who migrate to a third country to find work. Of these chain migrants (72%) has had more than one job after five years.

Monthly income

Our data suggest that the willingness to travel internationally results in relatively high monetary yields. On average, Dutch alumni who were employed in the Netherlands earn less (€ 3.933) than Dutch alumni who were employed abroad (€ 4.789). Migrants who remain in the Netherlands (€ 3.825) and those employed in their country of residence before their study in Maastricht (€ 3.891) earn about the same as Dutch students working in the Netherlands. The average monthly wage is the highest for the most geographically mobile. Alumni who came to Maastricht from abroad but sought employment in a third country earn (on average) € 6.923 per month after graduation. Additional analyses using the median income show similar patterns: Dutch alumni working abroad have a medium monthly income of € 4.000 and chain migrants have a medium monthly income of € 4.794. Median incomes of the other groups are about € 3.500.

Explaining differences

To what extent can differences in labor market success between students who remain in the Netherlands after graduation and those who are geographically mobile be explained by characteristics of students and study programs? If alumni from the Faculty of Arts and Social Sciences are most likely to move abroad after graduation and also most likely to find the best quality jobs, than observed higher returns to education should be attributed to alumni's choice of study rather than their choice to migrate.

To get closer to testing such explanations, regression analyses are useful. In such regressions, observed associations between variables can be statistically corrected for the

influence of the other variables in the model. In the explanatory analyses, we contrast those who work in the Netherlands with alumni that are working abroad.⁴ We conducted so-called logit regressions for binary (yes/no) labor market outcomes, and a technique called simple OLS regression for outcomes measures as a scale (e.g. income). The results are presented in table 9. Full models with estimates are presented in the Appendix.

In the first two columns of table 9, we control the differences in vertical match (column 1) and horizontal match (column 2) probabilities between those working abroad and those working in the Netherlands for background characteristics. The regression coefficients that measure the differences between those alumni who find “employment abroad” and those who are “employed in the Netherlands” are zero. This implies that the slightly better match probabilities for alumni traveling abroad are not the result of geographical mobility. Rather than being explained by geographically different labor market circumstances, the observed differences should be attributed to personal characteristics and study choice.

The third column shows that alumni who find employment abroad more often have a job with an international scope. These differences cannot be attributed to differences between study programs or observed differences between alumni’s observable characteristics.

In the previous section we showed that alumni who are willing to travel earn higher incomes than those who work in the Netherlands. The final column shows that differences in monthly income cannot be explained by differences between study programs or observed inter-personal differences. Column 4 indicates that after controlling for these characteristics, graduates who travel abroad have significantly higher wages than their peers who stayed in the Netherlands.

⁴ Models are more stable this way.

TABLE 9 Logit and linear regression estimations of various labor market outcomes

VARIABLES	1 Vertical match	2 Horizontal match	3 International job ^a	4 Monthly wage
Employed in the Netherlands	ref	ref	ref	ref
Employment abroad	0	0	+	+
Female	ref	ref	ref	ref
Male	0	0	0	+
Age	0	0	0	0
Dutch student	ref	ref	ref	ref
International student	0	0	0	0
Humanities & Science	ref	ref	ref	ref
Business & Economics	0	0	0	0
Health, Medicine and Life Sciences	0	+	-	0
Arts & Social Sciences	0	-	0	0
Psychology & Neurosciences	0	0	-	0
Law	0	0	0	0

0: no relation, +: significant positive relation, -: significant negative relation

a International job: What is the scope of your own work? (local/regional/national/international)

07

BRAIN STAY, BRAIN RETURN? CONNECTEDNESS AND BONDS

One of the theoretical reasons for return migration and for staying in the Netherlands is that students may feel connected to their country of origin. For example, Dutch-born students may yield higher results to their education in, say, Germany, but refrain from post-graduation migration because they are connected to the Netherlands. Similarly, in theory, German students may be more likely to have better occupational outcomes in the Netherlands, but return to Germany nonetheless.

TABLE 10 Connectedness with Maastricht University / Faculty (Do you still feel connected to: ...) answering categories 1 (not at all) to 5 (to a large extent)

	Maastricht University	N	Your old faculty	N
Dutch alumni employed in the Netherlands	2,6	275	2,5	274
Dutch alumni employed abroad	2,8	37	2,7	36
Non-Dutch alumni employed in the Netherlands	3,3	27	3,0	27
Non-Dutch alumni employed in country of residence before study in Maastricht	3,4	76	3,0	72
Non-Dutch alumni employed in country other than their previous residence	2,9	42	2,6	42

Our data have no direct information about the actual level of connectedness and bonds, but we may still be able to tentatively assess the extent to which students feel a bond with Maastricht University and the people they meet at university. To assess whether such deliberations contribute to explaining graduate mobility, we analyze two different types of bonds, i.e. institutional connections and connections with people. To assess the strength of institutional bonds, we presented Maastricht University alumni with statements as to the extent to which they still feel connected to their old faculty and to Maastricht University. Table 10 displays the results. Non-Dutch students who remain in the Netherlands after graduation are most likely to feel connected to Maastricht University. They are more connected to the university than Dutch students. Interestingly, return migrants also feel a stronger connection to Maastricht University and their old faculties than those employed in the Netherlands. A similar pattern can be observed for connection to the faculties.

Contacts with fellow students

We also explore whether alumni have professional contacts with fellow students or employees of Maastricht University (Table 11). Dutch alumni employed in the Netherlands (54%) and those employed abroad are most likely to be in contact with former students (59%), followed by those employed in a third country (55%). Return migrants have a lower probability of still being in contact with fellow students or employees of Maastricht University. The most likely to still be in contact with former fellow students were non-Dutch alumni who were employed in the Netherlands five years after graduation.

TABLE 11 In your working context, do you still have contact with fellow students of Maastricht University/employees of Maastricht University? (yes/no)

	Yes (%)	Yes (n)
Dutch alumni employed in the Netherlands	54	275
Dutch alumni employed abroad	59	37
Non-Dutch alumni employed in the Netherlands	78	27
Non-Dutch alumni employed in country of residence before study in Maastricht	47	76
Non-Dutch alumni employed in country other than their previous residence	55	42

APPENDIX

APPENDIX Logistic and linear regression estimations of various labor market outcomes

VARIABLES	1 Vertical match	2 Horizontal match	3 International job ^a	4 Monthly wage
Constant	2.074*** (0.669)	0.571 (0.756)	1.809 (1.537)	3.766*** (1.042)
Employed in the Netherlands	ref	ref	ref	ref
	-	-	-	-
Employment abroad	0.000 (0.003)	0.000 (0.002)	0.011*** (0.003)	7.515** (3.718)
Female	ref	ref	ref	ref
	-	-	-	-
Male	0.132 (0.181)	-0.129 (0.169)	0.025 (0.245)	548.300** (264.700)
Age	-0.021 (0.017)	0.023 (0.021)	-0.049 (0.046)	8.855 (25.750)
Humanities & Science	ref	ref	ref	ref
	-	-	-	-
Business & Economics	0.466 (0.463)	0.433 (0.438)	-0.220 (0.530)	695.200 (708.600)
Health, Medicine and Life Sciences	0.539 (0.463)	0.857* (0.444)	-2.099*** (0.555)	-492.300 (710.000)
Arts & Social Sciences	-0.313 (0.468)	-0.904** (0.438)	-0.488 (0.576)	-957.700 (743.000)
Psychology & Neurosciences	0.379 (0.535)	0.090 (0.491)	-1.164* (0.643)	-899.300 (792.300)
Law	0.139 (0.480)	-0.096 (0.450)	-0.859 (0.560)	-85.700 (750.600)
N	1.172	1.176	406	978

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

^a What is the scope of your own work? (local/regional/national/international)

